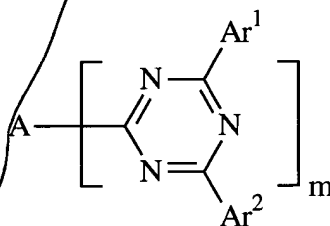


**WHAT IS CLAIMED IS:**

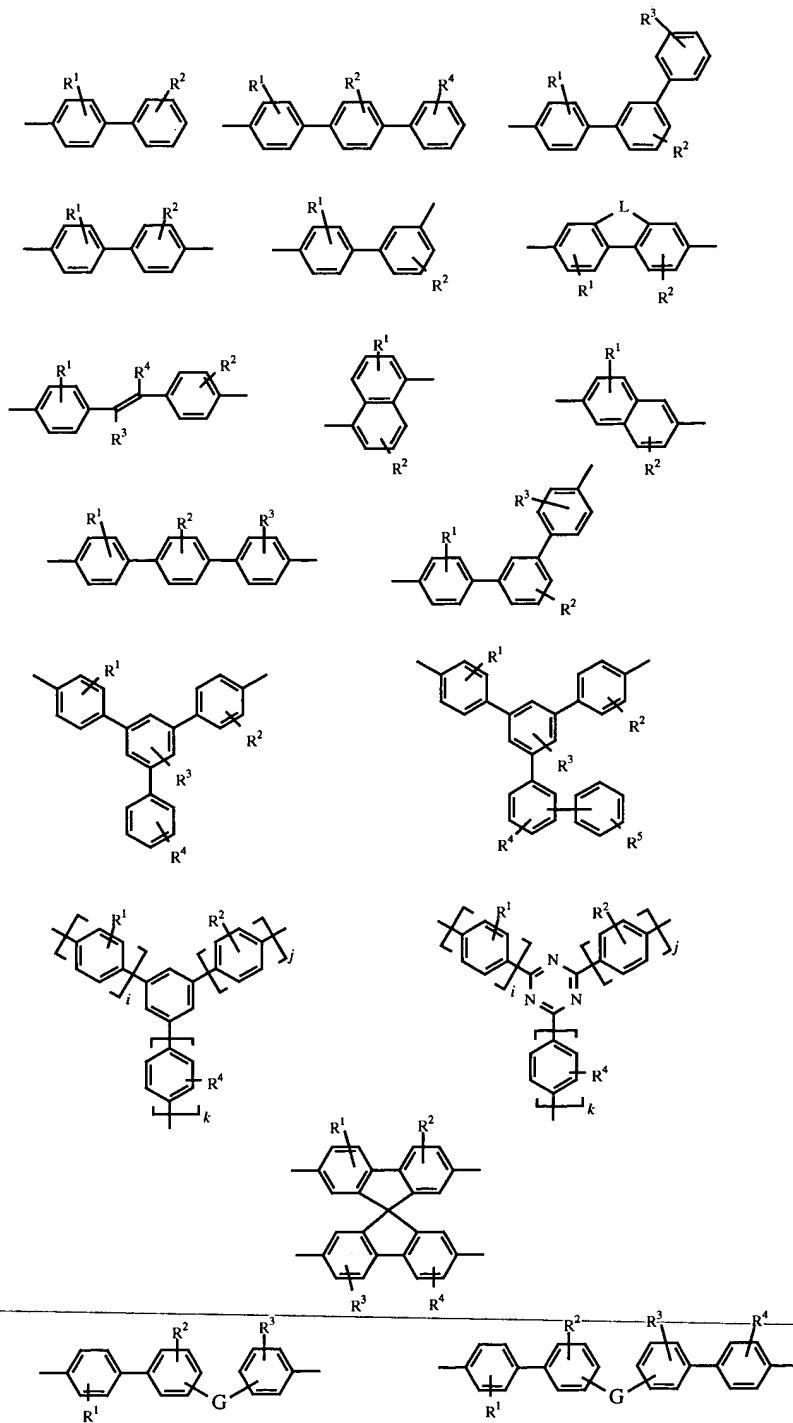
1. An electroluminescent device comprised of an anode and a cathode, and situated therebetween said anode and said cathode at least one electron transport layer comprised of a triazine of the formula



(I)

wherein A is a monovalent or a multivalent aromatic group which contains at least two conjugate-linked or at least two fused aromatic rings; Ar<sup>1</sup> and Ar<sup>2</sup> are each independently aryl or aliphatic; and m represents the number of repeating segments.

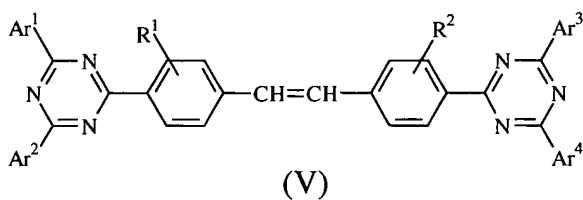
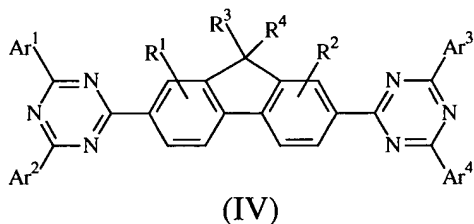
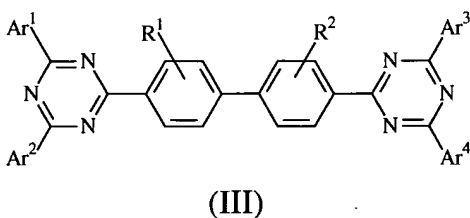
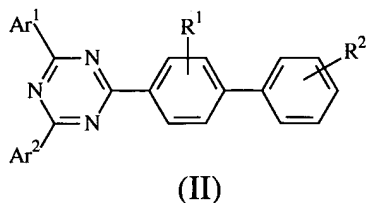
2. An electroluminescent device in accordance with **claim 1** wherein said A aromatic group is selected from the group consisting of



wherein  $R^1$  to  $R^5$  are each independently a substituent selected from the group consisting of hydrogen, aliphatic, a halogen atom, and a cyano group; L is a divalent group selected from the group consisting of  $-C(R'R'')-$ , alkylene, an oxygen atom, a sulfur atom; and  $-Si(R'R'')-$  wherein  $R'$  and  $R''$  are selected from the group consisting of hydrogen, alkyl, alkoxy, and aryl; G is a divalent linkage and each i, j, and k represent the number of repeating groups.

3. An electroluminescent device in accordance with **claim 1** wherein A contains a biphenyl, a naphthyl or a terphenyl;  $Ar^1$  and  $Ar^2$  are each independently an aryl group selected from the group consisting of a phenyl, a biphenyl, a naphthyl, and a stilbenyl; and wherein said aryl group optionally further contains a substituent selected from the group consisting of hydrogen, an alkyl group with from 1 to about 6 carbon atoms, an alkoxy group with from 1 to about 6 carbon atoms, a halogen, and a cyano group.

4. An electroluminescent device in accordance with **claim 1** wherein said triazine compounds are represented by the Formula (II), (III), (IV), or (V)



wherein Ar<sup>1</sup>, Ar<sup>2</sup>, Ar<sup>3</sup>, and Ar<sup>4</sup> are each independently an aryl; R<sup>1</sup> and R<sup>2</sup> are substituents selected from the group consisting of hydrogen, an alkyl, an aryl, an alkoxy, a halogen atom, and a cyano; R<sup>3</sup> and R<sup>4</sup> are each a divalent group L selected from the group consisting of —C(R'R'')—, alkylene, an oxygen atom, a sulfur atom, and —Si(R'R'')—, wherein R' and R'' are selected from the group consisting of hydrogen, alkyl, alkoxy, and aryl.

5. An electroluminescent device in accordance with **claim 4** wherein  $Ar^1$ ,  $Ar^2$ ,  $Ar^3$ , and  $Ar^4$  are selected from the group consisting of a phenyl, a biphenyl, a naphthyl, and a stilbenyl; and wherein said aryl group contains a substituent selected from the group consisting of hydrogen, an alkyl group with from 1 to about 6 carbon atoms, an alkoxy group with from 1 to about 6 carbon atoms, a halogen atom, and a cyano group.

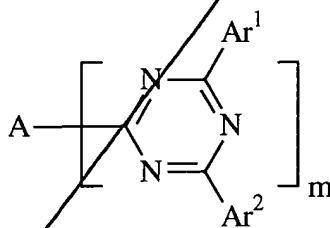
6. An electroluminescent device in accordance with **claim 4** wherein said aryl is selected from the group consisting of a phenyl, a tolyl, a methoxyphenyl, a butylphenyl, a naphthyl, and a biphenyl; and wherein  $R^1$  and  $R^2$  are hydrogen or methyl.

7. An electroluminescent device in accordance with **claim 4** wherein L is  $-C(R'R'')-$ , wherein  $R'$  and  $R''$  is a hydrogen atom, an alkyl group containing from 1 to about 10 carbon atoms, or an alkoxyl group containing from 1 to about 10 carbon atoms.

8. An electroluminescent device in accordance with **claim 4** wherein the triazine is selected from the group consisting of 2,4,6-tris(4-biphenyl)-1,3,5-triazine, 2,4,6-tris[4-(4'-methylbiphenyl)]-1,3,5-triazine, 2,4,6-tris[4-(4'-tert-butylbiphenyl)]-1,3,5-triazine, 2,4,6-tris[4-(4'-methoxybiphenyl)]-1,3,5-triazine, 4,4'-bis-[2-(4,6-diphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-tolyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-m-tolyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-methoxyphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-m-methoxyphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4-β-naphthyl-6-phenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 2,7-bis-[2-(4,6-di-phenyl-1,3,5-triazinyl)]fluorene, 2,7-bis-[2-(4,6-di-phenyl-1,3,5-triazinyl)]-9,9-dimethylfluorene, 4,4'-bis-[2-(4,6-di-phenyl-1,3,5-triazinyl)]-stilbene, and 4,4'-bis-[2-(4-phenyl-6-m-tolyl-1,3,5-triazinyl)]-stilbene.

9. An electroluminescent device in accordance with **claim 4** wherein the triazine is selected from the group consisting of 2,4,6-tris(4-biphenyl)-1,3,5-triazine, 4,4'-bis-[2-(4,6-diphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-tolyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-m-tolyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-methoxyphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-tert-butylphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, and 4,4'-bis-[2-(4,6-di-phenyl-1,3,5-triazinyl)]-stilbene.

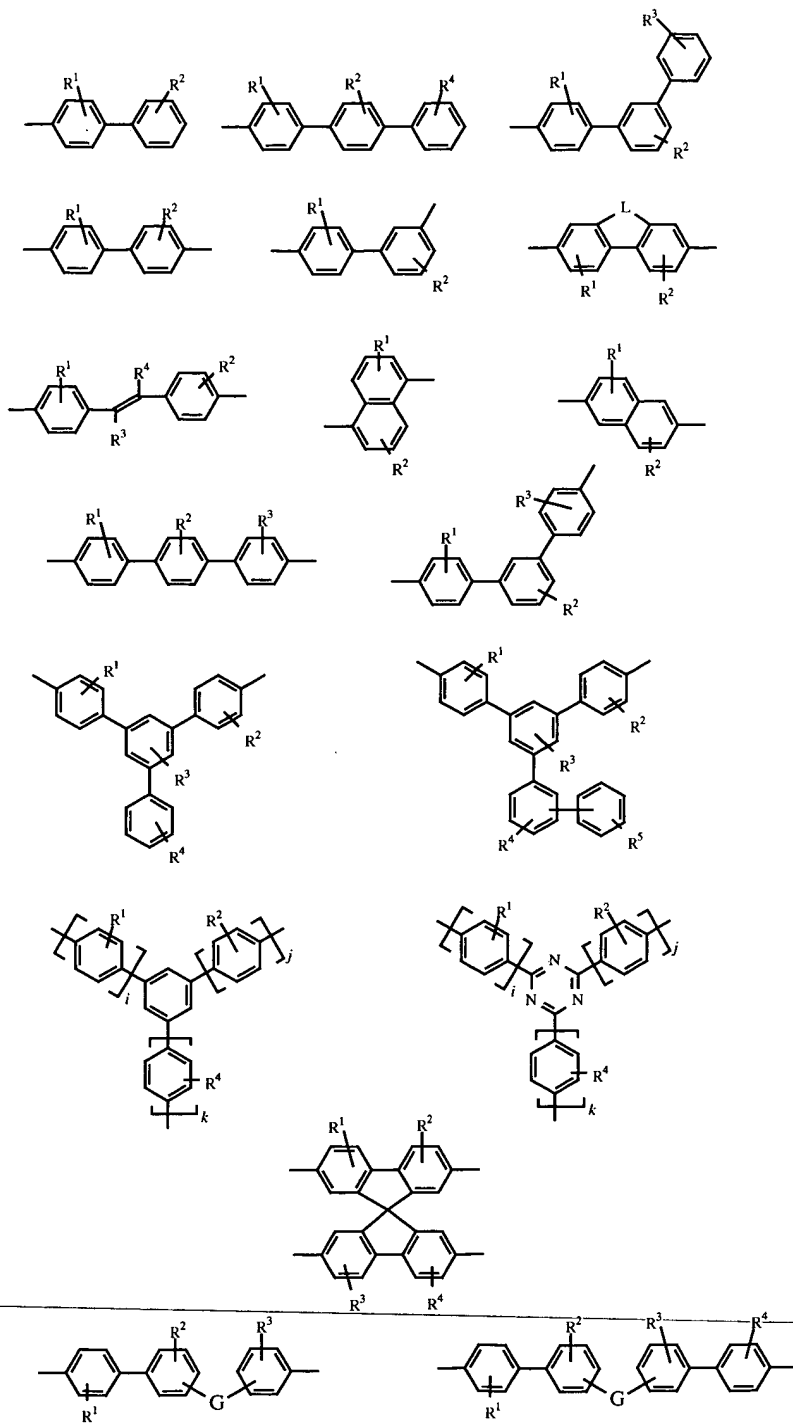
10. An electroluminescent device comprised of, in sequence, an anode, an optional buffer layer, a hole transport layer, an electron transport layer, and in contact therewith a cathode, wherein the electron transport layer contains an electron transport component comprised of a triazine compound or compounds encompassed by the formula



(I)

wherein A is an aromatic group which contains at least two conjugate-linked or two fused aromatic rings; Ar<sup>1</sup> and Ar<sup>2</sup> are each independently aryl or aliphatic; and m represents the number of repeating segments.

11. An electroluminescent device in accordance with **claim 10** wherein said A group is selected from the group consisting of

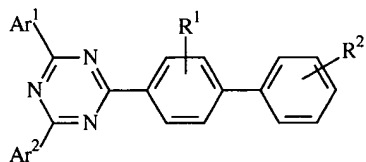




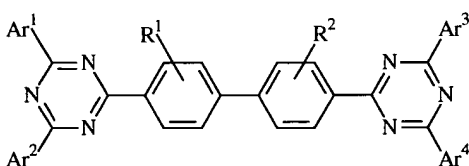
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12. An electrochromic dye contains a biphenyl moiety. It also contains a substituent that is not a phenyl, a naphthyl, or an aryl group, but is a substituted alkyl group, an alkyl group, or a vinyl group.

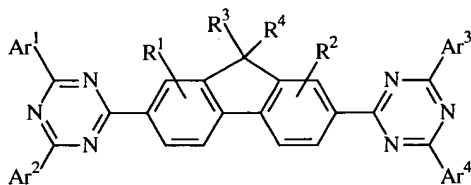
13. An electroluminescent device in accordance with **claim 10** wherein there is selected a triazine compound represented by the Formula (II), (III), (IV), or (V)



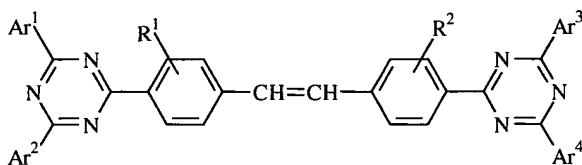
(II)



(III)



(IV)



(V)

wherein Ar<sup>1</sup>, Ar<sup>2</sup>, Ar<sup>3</sup>, and Ar<sup>4</sup> are each independently aryl; R<sup>1</sup> and R<sup>2</sup> are substituents selected from the group consisting of hydrogen, an alkyl, an aryl, an alkoxy, a halogen atom, and cyano; L is a divalent group selected from the group consisting of —C(R'R'')—, alkylene, an oxygen atom, a sulfur atom, and —Si(R'R'')—, wherein R' and R'' are each selected from the group consisting of hydrogen, alkyl, alkoxy, and aryl.

14. An electroluminescent device in accordance with **claim 13** wherein  $Ar^1$ ,  $Ar^2$ ,  $Ar^3$ , and  $Ar^4$  are selected from the group consisting of phenyl, biphenyl, naphthyl, and stilbenyl; wherein said aryl group further contains a substituent selected from the group consisting of hydrogen, an alkyl group with from 1 to about 10 carbon atoms, an alkoxy group with from 1 to about 10 carbon atoms, a halogen atom, and a cyano group.

15. An electroluminescent device in accordance with **claim 13** wherein said aryl is selected from the group consisting of a phenyl, a tolyl, an methoxyphenyl, a butylphenyl, a naphthyl, and a biphenyl; wherein  $R^1$  and  $R^2$  are hydrogen or methyl.

16. An electroluminescent device in accordance with **claim 13** wherein L is  $-C(R'R'')-$ , wherein  $R'$  and  $R''$  is a hydrogen atom, an alkyl group containing from 1 to about 6 carbon atoms, or an alkoxy group containing from 1 to about 6 carbon atoms.

17. An electroluminescent device in accordance with **claim 10** wherein the hole transport layer or the electron transport layer is a light emitting layer.

18. An electroluminescent device in accordance with **claim 10** wherein said buffer layer is comprised of a phthalocyanine or derivatives thereof, a tertiary aromatic amine, a polyaniline, or a polythiophene.

Sub 19. An electroluminescent device in accordance with **claim 10** wherein said buffer layer is comprised of the tertiary aromatic amine N,N',N,N'-tetraarylbenzidine, optionally doped with an aromatic polycyclic hydrocarbon stabilizer of rubrene or a 9,10-diphenylanthracene, wherein said stabilizer is present in an amount of from about 0.5 to about 10 weight percent, based on the weight of said tertiary aromatic amine, and said stabilizer.

20. An electroluminescent device in accordance with **claim 10** further containing a light emitting layer situated between the hole transport layer and the electron transport layer.

21. An electroluminescent device in accordance with **claim 20** wherein the light emitting layer is comprised of a metal chelate compound of an 8-hydroxyquinoline, or a stilbene derivative.

22. An electroluminescent device in accordance with **claim 20** wherein said light emitting layer further contains a fluorescent dye.

23. An electroluminescent device in accordance with **claim 22** wherein said fluorescent dye is selected from the group consisting of coumarins, quinacridones, and aromatic hydrocarbon fluorescent dyes.

24. An electroluminescent device in accordance with **claim 22** wherein said fluorescent dye is present in an amount of from about  $10^{-3}$  to about 10 mole percent based on the moles of said light emitting layer material.

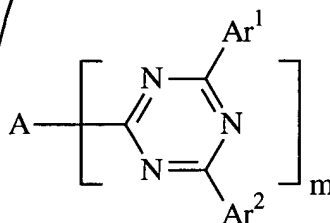
25. An electroluminescent device in accordance with **claim 10** wherein said triazine compound is selected from the group consisting of 2,4,6-tris(4-biphenyl)-1,3,5-triazine, 2,4,6-tris[4-(4'-methylbiphenyl)]-1,3,5-triazine, 2,4,6-tris[4-(4'-tert-butylbiphenyl)]-1,3,5-triazine, 2,4,6-tris[4-(4'-methoxybiphenyl)]-1,3,5-triazine, 4,4'-bis-[2-(4,6-diphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-tolyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-m-tolyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-methoxyphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-m-methoxyphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4-β-naphthyl-6-phenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 2,7-bis-[2-(4,6-di-phenyl-1,3,5-triazinyl)]fluorene, 2,7-bis-[2-(4,6-di-phenyl-1,3,5-triazinyl)]-9,9-dimethylfluorene, 4,4'-bis-[2-(4,6-di-phenyl-1,3,5-triazinyl)]-stilbene, and 4,4'-bis-[2-(4-phenyl-6-m-tolyl-1,3,5-triazinyl)]-stilbene.

26. An electroluminescent device in accordance with **claim 10** wherein said triazine compound is selected from the group consisting of 2,4,6-tris(4-biphenyl)-1,3,5-triazine, 4,4'-bis-[2-(4,6-diphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-tolyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-m-tolyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-methoxyphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, 4,4'-bis-[2-(4,6-di-p-tert-butylphenyl-1,3,5-triazinyl)]-1,1'-biphenyl, and 4,4'-bis-[2-(4,6-di-phenyl-1,3,5-triazinyl)]-stilbene.

27. An electroluminescent device in accordance with **claim 1** wherein the anode is comprised of an indium tin oxide, and the cathode is comprised of a low work function metal.

28. An electroluminescent device in accordance with **claim 27** wherein said low work function metal is lithium, magnesium, aluminum, or each of the alloys thereof.

29. An organic electroluminescent device comprising in the following sequence an anode comprised of indium tin oxide in a thickness of from about 1 to about 500 nanometers, an optional buffer layer comprised of a phthalocyanine or a stabilized tertiary aromatic amine and which buffer layer is of a thickness of from about 5 to about 300 nanometers, a hole transport layer comprised of a tertiary aromatic amine and which layer is of a thickness of about 1 to about 200 nanometers, a triazine electron transport layer of a thickness of from about 5 to about 300 nanometers, and a cathode comprised of a low work function metal and which cathode is of a thickness of from about 10 to about 800 nanometers and wherein said triazine is of the formula

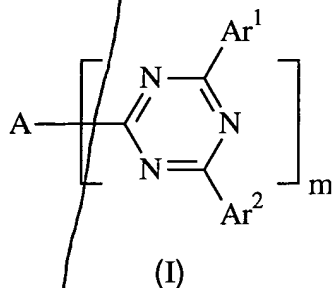


(I)

wherein A is aromatic which contains at least two conjugate-linked or two fused aromatic rings; Ar<sup>1</sup> and Ar<sup>2</sup> are each independently aryl or aliphatic; and m represents the number of repeating segments.

30. An organic electroluminescent device in accordance with **claim 29** wherein said anode is of a thickness of from about 30 to about 100 nanometers, said buffer layer is present and is comprised of a phthalocyanine or a stabilized tertiary aromatic amine and which layer is of a thickness of from about 10 to about 200 nanometers, a light emitting layer in contact with said hole transport layer and comprised of an 8-hydroxyquinoline metal chelate or a stilbene derivative and which layer is of a thickness of from about 1 to about 500 nanometers.

31. An organic electroluminescent device comprised of an anode, an organic luminescent medium, and a cathode, wherein the organic luminescent medium contains a triazine layer in contact with the cathode, which layer is comprised of the triazine compounds of Formula (I), and wherein said triazine functions as an electron transport, an electron injector, or simultaneously as an electron transport and an electron injector

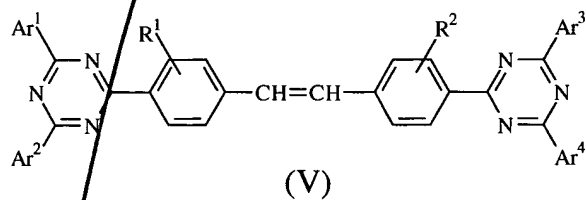
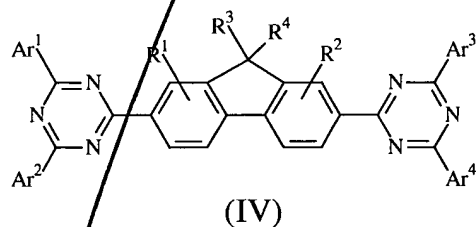
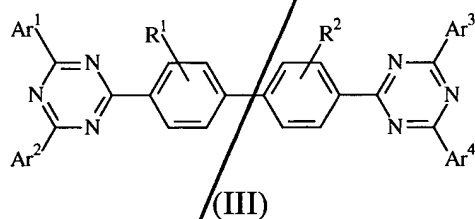
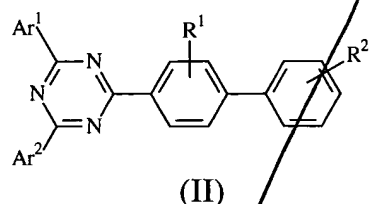


wherein A is a monovalent or a multivalent aromatic group which contains at least two conjugate-linked or at least two fused aromatic rings; Ar<sup>1</sup> and Ar<sup>2</sup> are each independently aryl or aliphatic; and m represents the number of repeating segments.

32. An organic electroluminescent device in accordance with **claim 31** wherein the cathode is comprised of lithium, magnesium, aluminum, or their alloys.

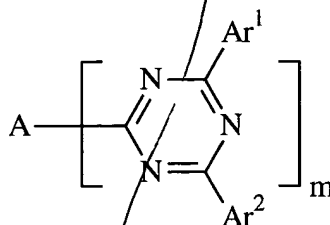
33. An organic electroluminescent device in accordance with **claim 31** wherein the cathode is comprised of aluminum.

34. An organic electroluminescent device in accordance with **claim 31** wherein said triazine is represented by the Formula (II), (III), (IV), or (V)





35. An electroluminescent device comprised of an anode, a cathode, and a triazine compound of the formula



(I)

wherein A is a monovalent aromatic group or a multivalent aromatic group which contains from about 2 to about 15 two conjugate-linked or from about 2 to about 15 fused aromatic rings; Ar<sup>1</sup> and Ar<sup>2</sup> are each independently aryl or aliphatic; and m represents the number of repeating segments and is a number of from 1 to about 4, and wherein said triazine functions as an electron transport, an electron injector, or simultaneously as an electron transport and an electron injector.

36. An organic electroluminescent device in accordance with **claim 29** wherein said anode is of a thickness of from about 30 to about 100 nanometers, said buffer layer is of a thickness of from about 10 to about 100 nanometers, said hole transport is of a thickness of from about 5 to about 100 nanometers, said triazine electron transport layer is of a thickness of from about 10 to about 100 nanometers, and said cathode is of a thickness of from about 50 to about 500 nanometers, and wherein said low is from about 2 to about 4 electron volts, and wherein Ar<sup>1</sup> and Ar<sup>2</sup> are each independently aryl.

37. An organic electroluminescent device in accordance with **claim 29** wherein said anode is of a thickness of from about 30 to about 100 nanometers, said buffer layer is of a thickness of from about 10 to about 100 nanometers, said hole transport layer is comprised of a tertiary aromatic amine in a thickness of about 5 to about 100 nanometers, thereover a light emitting layer comprised of an 8-hydroxyquinoline metal chelate or a stilbene derivative of a thickness of from about 10 to about 100 nanometers, said triazine electron transport layer is of a thickness of about 10 to about 100 nanometers, and said cathode is of a thickness of from about 50 to about 500 nanometers.

38. An electroluminescent device in accordance with **claim 2** wherein  $R^1$  to  $R^5$  are each alkyl, alkoxy, or mixtures thereof; alkyl for said  $R'$  and  $R''$  contains from 1 to about 25 carbon atoms; and each of said  $i$ ,  $j$  and  $k$  represent a number of from 1 to about 3.

39. An electroluminescent device in accordance with **claim 1** wherein at least one is from 1 to about 10.

40. An electroluminescent device in accordance with **claim 1** wherein said at least one is from 1 to about 3.

41. An electroluminescent device in accordance with **claim 1** wherein said at least two is from 2 to about 7.

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